

From the author
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OF DISEASED VERTEBRÆ.

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*Reprinted from the Boston Medical and Surgical Journal of
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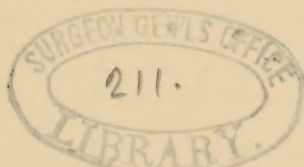
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EXTENSION IN THE TREATMENT OF DISEASED VERTEBRÆ.¹

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QUESTIONS have been sometimes asked me in regard to the origin and first employment of extension in the treatment of caries of the spine.

The first case of spinal caries in the treatment of which I have a record of the use of horizontal extension and counter-extension occurred in January, 1864.

At the period referred to the teaching of the highest authorities and of the text-books was that any attempt at extension was unjustifiable, and that the use of any means to prevent pressure together of the bodies of the diseased vertebræ or to separate them, however slightly, rendered a cure impossible. Sir Benjamin Brodie goes so far as to say that in cases where the disease has existed a long time the patient should be "supported by cushions and pillows so that the position in which he is placed may have no tendency to restore the spine to its original figure." He continues: "In the management of these cases it is important that we should always bear in mind that without undue interference on the part of the surgeon the carious or ulcerated surface of the vertebra above will come in contact with that of the vertebra below, and that it is to the union which takes place between them under these circumstances, at first by soft substance and afterwards by bony ankylosis, that we are to look for the patient's recovery. In artificially straightening or

¹ Under this term, as here used, lateral curvature and kindred affections are not included.

elongating the incurvated spine we necessarily disturb this curative process, and therefore all attempts to do so, whether by machinery or by laying the patient in the supine posture on a horizontal board, are to be scrupulously avoided.”¹

Mr. Samuel Cooper, in his *First Lines of Surgery*, coincides with Sir Benjamin Brodie, and quotes him in corroboration of his own views.

Sir Astley Cooper says “That the mode in which the disease becomes cured is by the upper portions of the vertebrae falling on the lower, and in this way ankylosing. This must be your object in the treatment of this disease.” . . . “As to avoiding deformity, that is out of the question; in all these cases deformity is inevitable; whatever you do this cannot be prevented.”²

“The incurvation forwards,” says Lawrence, “is necessary to fill up the deficiency produced by ulcerative absorption.”³

I was first led to deviate from the instruction of these high authorities in regard to treatment by the occurrence of the case I have mentioned. The patient was a girl seventeen years of age. The disease was in the dorsal vertebrae, and was attended by excruciating pain night and day.

My notes of the case are: “Four vertebrae projecting. Excessive incurvation in lumbar region, to such a degree as almost to throw the body from its balance backward. Constant pain; debility; emaciation. Protruberance and incurvation constantly increasing.”

Perfect rest, — immobilization, in fact, — counter-irritants, combined with other measures which have usually brought relief, were of no avail. The pain continued without mitigation.

Thus disappointed it occurred to me that in hip disease, a disease of similar structures to those of the

¹ Diseases of the Joints, page 266.

² Chelius' System of Surgery, vol. i., page 314.

³ Supra citation.

spine, it is the general experience that relief to pain is often, almost uniformly, obtained by extension or by separation, so far as the anatomy of the parts admit, or, at any rate, by preventing pressure on the diseased tissues. From analogy why should not stretching of the muscles and ligaments connected with the carious or inflamed vertebral joints in like manner, by lessening internal pressure, relieve suffering?

In conformity with this theory I applied a padded leather belt around the pelvis. This belt had straps on each side extending from over the iliac bones towards the foot of the bed, terminating in loops. Through each of these loops was passed a cord to which a weight was attached, one on each side. The bedstead being tilted towards the head the upper portion of the body served for counter-extension. Since that time I have sometimes, for this purpose, made use of a padded belt around the chest, below the arms, and attached to the head-board. Soon after the application of the weights the pain was relieved. The directions given were that they should only be used during the day. The relief was so great that the patient requested that the extension should be continued night and day.

In treating these cases it has, for many years, been my plan to have a small pillow or pad placed under the projecting or diseased portion of the spine. This pad serves as a fulcrum. The upper portions of the body above the curvature and the lower portions below act as levers¹ by which the diseased surfaces are prevented from coming in contact, or at least pressure of these surfaces is removed, and the spine is more or less straightened. This fulcrum I had been in the habit of using previously to the case here referred to, and both of these measures have been employed in every case to which they appeared applicable since the date I have mentioned. In the case above described

¹ Of power proportioned to the thickness of the pad, which should never be very thick.

the cure was perfect. My memorandum of this case on July 9th says: "Patient has continued to improve. Has had no pain in back since use of weights. Projection and incurvation have gradually lessened. Has gained flesh rapidly. Is in good spirits. Applied, to-day, spinal body apparatus." From this date she began to sit up and walk.

The patient went out to service, and was afterwards married.

The second case in which I employed this method came under my care in May of the same year (1864). The patient was a girl four years of age. Three dorsal vertebrae were diseased. "Treatment: weights to the hips; counter-extension by means of a strap around the chest, and attached to the head of the bedstead." My next memorandum is dated August 6th. "Spinal protuberance lessened. General health greatly improved."

In this case the result was complete restoration to health.

In 1873 I received a visit from this patient after an interval of nine years. She was in perfect health, had no deformity except slightly rounded shoulders, and this was the only vestige that remained of the disease from which she had suffered.

In cases of disease of the cervical vertebrae the success which has attended extension continued night and day for months has been remarkable both in the complete removal of the curvature and also in the relief and comfort afforded to the patient. In the treatment of caries in this region the straps by which extension is made are an important item. They should be of soft leather, well padded, and carefully fitted to the occiput, and so shaped to the chin as to avoid the liability of slipping back against the throat. Of late I have used head gear similar to that employed by Dr. Sayre in connection with his suspension tripod, and have found it answer well. Where the disease is in the neck or in the cervico-dorsal region the bed should be perfectly level or sloped gently towards the foot.

A recent case, treated during the spring and summer of 1883, was a striking example of the efficacy of continued extension in cervical caries.

The patient was a boy four years old. He was injured in May, 1882, by a sheep butting his head and neck. He was taken up insensible. Unmistakable evidence of disease was not manifested until the succeeding winter. The child when first brought to me, in March, 1883, was never free from suffering. His countenance bore the marks of great distress. His head was thrown backward, the occiput resting upon the upper dorsal vertebrae. So deep was the sulcus thus formed, and so forcibly was the head drawn back, that it was impossible, without the use of unjustifiable force, to insert the finger for the purpose of testing the sensitiveness of the bones. The action of the vesical sphincter was impaired.

The head gear and weight were at once applied with the effect of relief from pain. The neck was gradually elongated, and the head brought to its natural position. The child became playful and happy. From a state of utter misery he was changed to one of enjoyment; laughing and amused through the day, and sleeping well at night. He had a bench placed across his bed, on which were his toys, etc.

I had a pulley attached to one end of one of Dr. E. H. Bradford's steel bed-frames. This frame I have found a great convenience in such cases. On it the child could be moved about, and in summer placed upon the piazza or beneath the shade of trees, and the extension be still continued.

In October, 1883, the patient was discharged from treatment in perfect health, with restored activity, and with a normally straight neck.

During these months the weight had been suspended to his head almost without intermission. In a letter received from his mother in September, she says: "The little boy is doing splendid. So far as I can see his neck and back are as perfect as any one's." An-

other letter, received February 18, 1884, gives information of the boy's uninterrupted good health.

This is in brief the history of the introduction of the present treatment of spinal disease by extension. By it I know that much has been and much can be accomplished. It certainly appeared to be carving out a new path when these changes were first introduced in the approved methods of treatment. The course of treatment by complete rest and extension which was adopted in the cases above cited is not applicable to every instance of vertebral disease. The judgment of the practitioner must be relied upon in the selection of those cases to which it is appropriate. But I would here testify from experience that the large majority of patients suffering from caries of the spine have a far more favorable chance for complete restoration if such a course is pursued during a certain period of the disease than by any other method. And still more forcibly would I say that cervical disease treated in the way above indicated will be attended by a success as regards comfort and symmetry which cannot be attained by a course which relies upon the use of instruments in the upright position.

I do not intend it shall be inferred from what I have said that the cases related in the previous pages were the first in which extension had been used in the treatment of diseased spine. Samuel Hare, of London, in 1849, and E. W. Tuson in 1841, employed extension in the treatment of spinal disease. R. W. Bampfield in 1845 advocates this measure in excurvation of the spine, under which head he appears to class simple excurvation and also curvature from disease.

But, on the other hand, this writer says: "Instruments for stretching and supporting the vertebral column should not be employed during scrofulous or simple inflammation or caries, or vertebral destruction by absorption; neither should they be resorted to during the regeneration of bone."¹

¹ Essay on Curvatures and Diseases of the Spine, London, 1845, page 93.

During the twenty years more or less which had elapsed from the period of these publications to 1864, the date of the first case related in this paper, the English authorities taught, as we have seen, apparently on theoretical grounds, a course opposed to extension. In America it had not, I think, been practiced until employed by me in 1864. Horizontal extension was then resorted to primarily for the relief of pain, and I considered it an original suggestion, so applied. The prevention, removal, or diminution of deformity was then secondary, although they have since become equally important, results.

R. Volkman, in a monograph published in 1868, speaks of the beneficial effects to be derived from extension in the recumbent position in caries of the spine, and I am gratified that his experience likewise coincides with mine, especially in regard to the relief from pain frequently afforded by this method.¹

Reference has been made to the usefulness of a narrow pillow or pad beneath the prominent vertebrae. In this connection I will mention that in hip disease a similar pillow under the pelvis operates likewise as a fulcrum, the trunk being the extending power above and the leg with weight attached to it below, thus tending to prevent contraction at the groin.

The constitutional remedies suitable to these and similar cases have not here been dwelt upon. Attention to this point should on no account be neglected. Every case at some period requires the aid which can be derived from appropriate remedies judiciously administered. Flying blisters, very small, will often lessen the tenderness of the bones and of the surrounding parts, and relieve the costal, gastric, and abdominal pains which almost uniformly attend the earlier stages of the disease. Iron and cod-liver oil will frequently be of service. Stimulants, small quantities of wine or brandy, are required in certain conditions of the system and afford help which can be derived from no other remedy.

¹ Gelenk entzündung und Gewichts extension. 1868.

The syrup of the lacto-phosphate of lime is a convenient means by which an essential constituent in the formation of bone can be introduced into the economy in a manner easily assimilated. The discovery of this preparation several years since by M. Dusart has contributed an auxiliary which, theoretically at least, should be of important service in our treatment of diseased bone.

The preparations of lime in some of the various forms in which they are presented to us I had previously employed, but with no gratifying results. Not infrequently the remedy passed through the system unchanged. The lactic-acid solution is readily acted upon by the absorbents, is withal an agreeable medicine, and supplies an element which is required, and the use of this remedy in practice has appeared to be attended with decided benefit.

